Product Brief

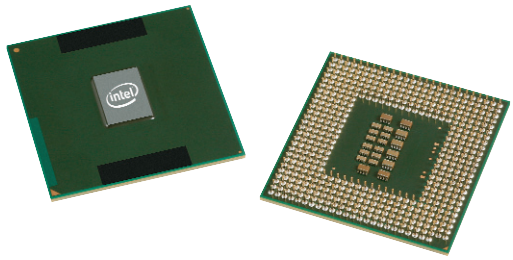
Dual-Core Intel® Xeon® Processor LV

Embedded Computing

Dual-Core Intel® Xeon® Processor LV for Dual-Processor Embedded Computing

Product Overview

The Dual-Core Intel® Xeon® processor LV is a member of Intel's growing product line of multi-core processors. This dual-core processor combines the benefits of two high-performance execution cores with intelligent power management features to deliver significantly greater performance-per-watt over previous single-core Intel Xeon processors. Intel's 65nm process technology makes it possible to integrate two cores, along with many advanced features, into one physical package.



This processor combines the benefits of dual-core with dual-processor capabilities providing four high-performance cores per platform (see Figure 1 for dual-core/dual-processor configuration). Available in two speeds – 2.0 GHz and 1.66 GHz – the Dual-Core Intel Xeon processor LV is ideal for a wide range of low-power embedded, storage and communications applications such as storage area networks (SAN), network attached storage (NAS), routers, virtual private networks (VPN), ruggedized small form factor systems, intrusion detection systems, and telecommunications (wireless and wireline) servers, particularly in AdvancedTCA* form-factor designs. While incorporating advanced processor technology, it remains software-compatible with previous IA-32 processors.

The Dual-Core Intel Xeon processor LV is validated with the Intel® E7520 chipset featuring high bandwidth for increased memory and I/O throughput (see Figure 2). Intel's comprehensive processor/chipset validation process enables fast deployment of next-generation platforms to help developers maximize competitive advantage while minimizing development risks.

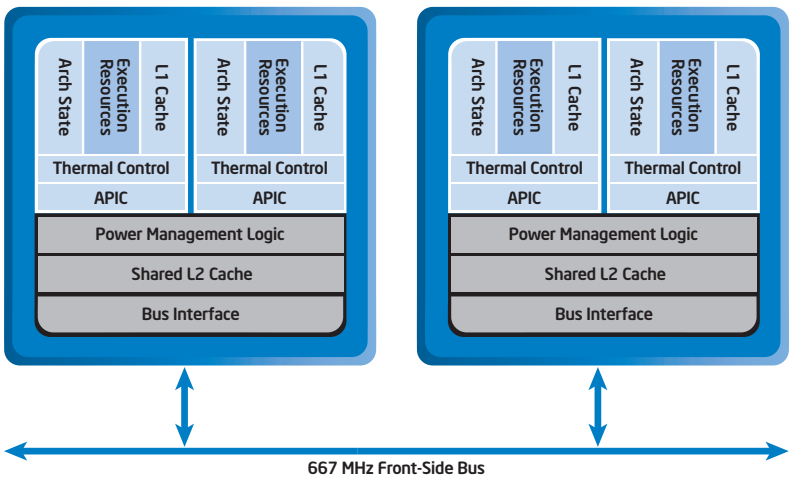


Figure 1: Dual-Processor configuration for Dual-Core Intel® Xeon® Processor LV provides four high-performance cores per platform.

Product Highlights

- Two complete execution cores in one processor package provide advancements in simultaneous computing such as multi-threaded applications and multi-tasking environments. Dual-core processing efficiently delivers performance while balancing power requirements
- High-performance front-side bus (FSB) provides dual-processor support for demanding high-performance, volume applications. Combined with dual-core processing, this supports up to four simultaneous threads on the system
- Enhanced Intel SpeedStep® technology allows a system to dynamically adjust processor voltage and core frequency, decreasing average power consumption and average heat production
- Intel® Smart Cache Design allows two execution cores to share 2 MB of L2 cache, reducing FSB traffic and enhancing system responsiveness
- Intel® Advanced Thermal Manager supports new digital temperature sensors and thermal monitors on each execution core to enhance thermal monitoring accuracy
- Streaming SIMD Extensions 3 (SSE3) provides significant performance enhancement for multi-media applications. Additional instructions designed to improve thread synchronization, complex arithmetic, graphics, and video encoding
- Fully code compatible with existing Intel architecture-based 32-bit application software
- Utilizing Intel® Dynamic Power Coordination, application software or operating system can change the sleep state of each execution core, allowing the platform to balance performance and power dissipation
- FSB address, data, and response parity protection provides a key reliability and data integrity feature for the communications, storage, and other embedded market segments
- Enhanced 36-bit memory addressing supports up to 16 GB of DDR2 memory, when paired with the Intel E7520 chipset
- Embedded lifecycle support protects system investment by enabling extended product availability
- Along with a strong ecosystem of hardware and software vendors, including members of the Intel® Communications Alliance (intel.com/go/ica), Intel helps developers cost-effectively meet design challenges and shorten time-to-market

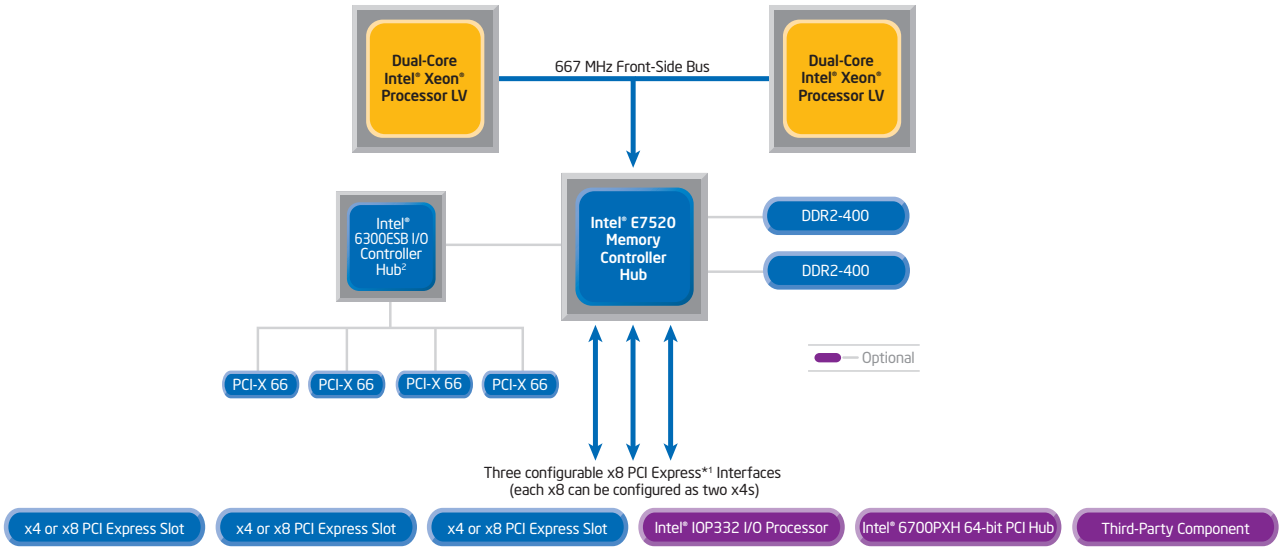


Figure 2: Two Dual-Core Intel® Xeon® Processors LV with the Intel® E7520 Chipset.

¹ PCI Express reduced-power state L0s not supported.

² Intel® 6300ESB ICH supports up to 4 PCI-X down devices.

Benchmark Tests Demonstrate Improvements in Performance and Performance-per-Watt

Dual-core, low-voltage processors versus single-core, low-voltage processors

The Dual-Core Intel Xeon processor LV 2.0 GHz can provide a greater than 2X performance gain as compared to the single-core LV Intel® Xeon® processor 2.8 GHz (see Figure 3). Given its lower thermal dissipation, the Dual-Core Intel Xeon processor LV 2.0 GHz can deliver a 4X improvement in performance/watt as compared to previous single-core LV Intel Xeon processor 2.8 GHz (see Figure 4).

Figure 3: Relative Performance (Specint_rate_base2000)[3,4]

Source: Intel Corporation

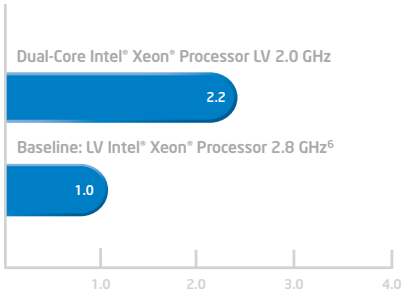
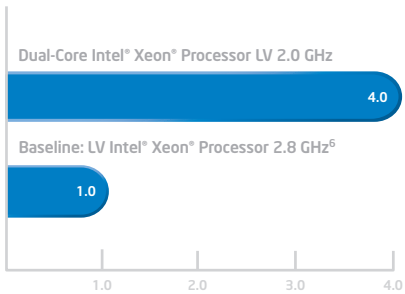


Figure 4: Relative Performance/Watt (Specint_rate_base2000/TDP)[3,4,5]

Source: Intel Corporation



[3] Platform Configurations:

- Two Dual-Core Intel Xeon Processors LV 2.0 GHz, Intel E7520 Memory Controller Hub, DDR2-400 MHz, 8 DIMMS, each with 512 MB memory. (Dual-Core Intel® Xeon® Processor LV with Intel® E7520 Chipset Development Kit)
- Two Low Voltage Intel Xeon Processors with 800 MHz System Bus, Intel E7520 Memory Controller Hub, DDR2-400 MHz, 8 DIMMS, each with 256 MB memory. (Intel® Xeon® Processor with 800 MHz system bus, Intel® E7520 Chipset, and Intel® 6300ESB ICH Development Kit)

Performance tests and ratings are measured using specific computer systems and/or components and reflect the approximate performance of Intel product as measured by those tests. Any difference in system hardware or software design configuration may affect actual performance. Buyers should consult other sources of information to evaluate the performance of systems or components they are considering purchasing. For more information on performance tests and on the performance of Intel products, visit http://www.intel.com/performance/resources/limits.htm

[4] SPEC CPU2000 benchmark tests reflect the performance of the microprocessor, memory architecture, and compiler of a computer system on compute-intensive, 32-bit applications. SPEC benchmark test results for Intel microprocessors are determined using particular, well-configured systems. These results may or may not reflect the relative performance of Intel microprocessors in systems with different hardware or software designs or configurations (including compilers). Buyers should consult other sources of information, including system benchmarks, to evaluate the performance of systems they are considering for purchase. For more information about SPEC CPU2000, visit http://www.intel.com/performance/resources/limits.htm

[5] Performance/watt reflects the Spec CPU2000 benchmark test results (as described above), divided by Thermal Design Power (TDP) for the respective processors. For the Dual-Core Intel Xeon Processor LV 2.0 GHz, TDP is specified at 31W. For the Low Voltage Intel Xeon Processor with 800 MHz System Bus, TDP is specified at 55W.

[6] Intel branded product name for "LV Intel Xeon Processor 2.8 GHz" is Low Voltage Intel Xeon Processor with 800 MHz System Bus.

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Product Number	Core Speed	Front-Side Bus Speed	L2 Cache	Thermal Design Power	VID	Tjunction	Package
LF80539KF0412M	2.0 GHz	667 MHz	2M	31W	0.825V – 1.275V	0-100° C	478 µFC-PGA
LF80539KF0282M	1.66 GHz	667 MHz	2M	31W	0.825V – 1.275V	0-100° C	478 µFC-PGA

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Embedded Intel® Architecture Home Page:	intel.com/design/intarch
Developer's Site:	developer.intel.com
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